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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/828,635	04/05/2001	Kyusik Sin	K35R1681/3480p	5517

35219 7590 09/26/2006

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EXAMINER

BERNATZ, KEVIN M

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 09/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/828,635

Applicant(s)

SIN ET AL.

Examiner

Kevin M. Bernatz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3,6-11 and 14-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,6-11 and 14-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 12/27/2005.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Response to Amendment***

1. Amendments to claims 1, 6, 11 and 17, cancellation of claims 4, 5, 12 and 13, and submission of the declaration of Kyuski Sin, filed on December 27, 2005, have been entered in the above-identified application.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Examiner's Comments***

3. The Examiner apologizes for the delay in consideration of the December 27, 2005 amendment. The delay was due to the amendment being incorrectly coded when entered which caused no action request to be generated.

Applicants' claims include language that is confusing because it is inconsistent with the common definition usually applied to the terms in the art. Specifically, applicants recite various layers as being "adjoining" (*independent claims 1, 11 and 17*) or "disposed adjacent" (*independent claim 17*), yet then insert additional layers between the "adjoining" or "disposed adjacent" layers in dependent claims. One of ordinary skill in the art would generally consider that either a claim is directed to layers that are "adjoining"/"disposed adjacent" or the claim is open to additional layers located therein, not both. While the Examiner acknowledges that dependent claims further limit an independent claim, the limitations of the independent claim must still be met (i.e. a

dependent claim includes all limitations of the claims from which it depends). As such, various dependent claims in the present application end up requiring that layers are both "adjoining"/"disposed adjacent", as well as having layers located therebetween.

Specific examples are as follows:

- Claim 6 recites a fourth ferromagnetic (FM) layer and a third nonferromagnetic (NM) layer, wherein the third NM layer adjoins said first and fourth FM layers, yet claim 1 states that first FM layer is adjoining said first NM layer and said first antiferromagnetic (AFM) layer;
- Claim 7 recites an additional AFM layer adjoining at least one of said first and fourth FM layers, yet this appears to already be claimed;
- Claim 18 recites a first and second NM layer adjoining said first and second FM layers and said third FM layer, yet claim 17 recites that the first and second FM layers are "disposed adjacent" to said third FM layer; and
- Claim 20 recites first and second AFM layers adjoining said first and second NM layers distal to said third FM layer, yet the first and second NM layers are recited as adjoining said first and second FM layers in claim 18.

Since applicant may act as his or her own lexicographer and the defined terms are not exclusively used to mean "directly adjacent" (which excludes additional layers from being therebetween), the Examiner deems that the claims are definite, but that the record must be clear on the scope afforded the claim limitations.

Therefore, to clarify the record, the Examiner notes that for the purposes of evaluating the prior art, the Examiner has given the term(s) "adjoining" and "disposed adjacent" the broadest reasonable interpretation(s) consistent with the written description in applicants' specification as it would be interpreted by one of ordinary skill in the art. *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997); *In re Donaldson Co., Inc.*, 16 F.3d 1190, 1192-95, 29 USPQ2d 1845, 1848-50 (Fed. Cir. 1994). See MPEP 2111. Specifically, the Examiner notes that applicants' disclosure and dependent claims clearly indicate that additional layers are within the scope of the claimed limitations, and as such, the Examiner has given the terms "adjoining" and "disposed adjacent" their broadest reasonable interpretation consistent with applicants' as-filed written description.

#### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 7 and 20 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for one set of first and second antiferromagnetic layers, does not reasonably provide enablement for two sets of first and second antiferromagnetic layers. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. For the purposes of evaluating the prior art,

the Examiner has interpreted claims 7 and 20 as further limiting the first and second antiferromagnetic layers recited in claims 1 and 17, respectively.

***Claim Rejections - 35 USC § 103***

6. Claims 1 – 3, 8 – 11 and 14 – 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noma et al. (WO 2001-03130 A1) in view of Baumgart et al. (U.S. Patent No. 5,287,238). See U.S. Patent No. 6,501,627 B2, which is the U.S. equivalent of WO '130 A1.

Regarding claims 1 – 3, 8 – 11 and 14 – 17, Noma et al. is relied upon for the reasons of record as set forth in Paragraph No. 5 of the Office Action mailed on September 29, 2005.

Noma et al. fail to disclose the amended limitations “first and second antiferromagnetic layers having different blocking temperatures ...having a high blocking temperature” (i.e. the subject matter of prior claim 5).

However, Baumgart et al. teach that it is known in the art that when using two AFM layers in different structural locations in a magnetic head to pin magnetization directions of separate ferromagnetic layers (*i.e. as in Noma et al.*), that one should use AFM layers with different blocking temperatures in order to facilitate pinning the individual layers separately (*col. 2, lines 30 – 34; col. 4, line 65 bridging col. 5, line 10; col. 5, lines 39 – 52; and col. 7, line 48 bridging col. 8, line 29*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Noma et al. to utilize first and second

AFM layers meeting applicants' claimed limitations as taught by Baumgart et al., in order to facilitate pinning the individual layers separately.

7. Claims 6, 7 and 18 – 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noma et al. in view of Baumgart et al. as applied above, and further in view of Mack et al. (U.S. Patent No. 6,462,919 B1).

Noma et al. and Baumgart et al. are relied upon as described above.

Mack et al. is relied upon for the reasons of record as set forth in Paragraph No. 9 of the Office Action mailed on September 29, 2005.

8. Claims 1 – 3, 6 – 11 and 14 – 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mack et al. ('919 B1) in view of Baumgart et al. ('238) as evidenced by Schwarzl (DE 19836567 A1). See U.S. Patent App. No. 2001/0050859 A1, which is the English language equivalent of DE '567 A1.

Regarding claims 1 – 3, 6 – 11 and 14 – 20, Mack et al. is relied upon for the reasons of record as set forth in Paragraph No. 6 of the Office Action mailed on September 29, 2005.

Mack et al. fail to disclose the amended limitations "first and second antiferromagnetic layers having different blocking temperatures ... having a high blocking temperature" (i.e. the subject matter of prior claim 5).

However, Baumgart et al. teach that it is known in the art that when using two AFM layers in different structural locations in a magnetic head to pin magnetization

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directions of separate ferromagnetic layers (*i.e. as in Noma et al.*), that one should use AFM layers with different blocking temperatures in order to facilitate pinning the individual layers separately (*col. 2, lines 30 – 34; col. 4, line 65 bridging col. 5, line 10; col. 5, lines 39 – 52; and col. 7, line 48 bridging col. 8, line 29*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Mack et al. to utilize first and second AFM layers meeting applicants' claimed limitations as taught by Baumgart et al., in order to facilitate pinning the individual layers separately.

### ***Response to Arguments***

#### **9. The rejection of claims 6, 7 and 17 – 20 under 35 U.S.C § 112 – 1<sup>st</sup>**

##### **Paragraph**

The above noted rejection has been withdrawn in view of applicant(s) arguments, which have been found persuasive.

#### **10. The rejection of claims 1 – 3, 6 – 11 and 14 - 20 under 35 U.S.C § 103(a) – Noma et al. in view of various references**

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection. The Examiner notes that the declaration of Kyuski Sin would also appear to support an invention date before the priority date of Noma et al., however presently there is no claim on record to such a date.



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**11. The rejection of claims 1 – 3, 6 – 11 and 14 - 20 under 35 U.S.C § 103(a) – Mack et al. in view of Baumgart et al.**

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

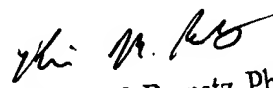
***Conclusion***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M Bernatz whose telephone number is (571) 272-1505. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KMB  
September 19, 2006

  
Kevin M. Bernatz, PhD  
Primary Examiner